gouty patients with purin-free food and have studied the elimination of uric acid in the urine and feces. As there was always the possibilty of bacterial decomposition in the intestines, Benczur (*Zeit. f. exp. Path. u. Therap.*, 1909, vii, 339), at the suggestion of Brugsch, injected a known quantity of uric acid intramuscularly to determine how much of it could be recovered. As the procedure is not without unpleasant consequences, such as marked local and constitutional symptoms, Benczur omitted controls on normal individuals, obtaining them from the literature. The work of others has shown that healthy persons excrete 50 to 99 per cent. of uric acid injected intramuscularly. Benczur repeated the experiment on a patient suffering with gout. He injected 0.5 gm. uric acid into the gluteal region; the patient had been on a purin-free diet for several days, and it was found that the average daily output of endogenous uric acid was 0.2101 gm. During the two days immediately following the injection 81.6 per cent. of that given had been excreted. Benczur believes it not unlikely that the increase was due in part to the destruction of leukocytes, because of the marked local reaction, together with fever and general malaise, which followed the reaction. The same occurred in the normal individuals reported in literature. The experiment shows that the gouty patient eliminated uric acid injected intramuscularly just as a healthy subject does. In other words, the renal excretion of uric acid in the gouty is apparently normal.

The Effect of Compression of the Superior Mesenteric Artery upon the Systemic Blood Pressure.—Arteriosclerosis of the splanchnic arteries, presumably on account of its action in setting up increased peripheral resistance to the flow of blood, and thus raising the systemic blood pressure, has long been accounted a cause of cardiac hypertrophy. Longcope and McClintock (*Univ. Penna. Med. Bull.*, 1909, xxii, 226) have studied this condition experimentally in dogs by noting the changes in blood pressure produced by compression of the superior mesenteric artery. In five minutes the vessel was compressed or ligated forty-three times, and in every instance a rise of blood pressure resulted. The average elevation of pressure varied from 4.5 mm. to 10.3 mm. The changes in arterial pressure seemed to vary in direct proportion to the amount of constriction. When the compression was of short duration the elevation of blood pressure continued until the experiments were stopped, but when the vessel was ligated for a longer period, the primary rise in pressure was, except in one instance, followed by a secondary fall to normal. Compression of the aorta at the level of the diaphragm produced a marked and rapid rise in blood pressure, but neither compression at the bifurcation nor ligation of one or both renal arteries resulted in any alteration in systemic pressure.

A Quantitative Index to Tuberculin Treatment.—The two factors of value in tuberculin treatment are toxin tolerance and reaction. Toxin tolerance is the object to be gained in acute cases which have become afebrile, and it is obtained by the use of doses small enough to avoid reactions. In chronic cases, and in certain others, which, after long treatment, have come to a standstill, the productions of mild reactions are apparently beneficial. One difficulty in the therapeutic administration of tuberculin has hitherto been the impossibility of determining accurately the dosage, which in a given individual will, on the one hand, give the greatest stimulation without reaction, or, on the other hand, will produce a reaction of mild grade. Basing their work on experience with the cutaneous tuberculin test, WHITE, GRAHAM, and VON NORMAN (*Jour. Med. Research*, 1909, xxi, 225) have formulated a procedure to govern accurate dosage. They have found that a definite ratio exists between the amount of tuberculin applied cutaneously and that given subcutaneously for the production of local and constitutional reactions. Thus, one-fifteenth of the amount of O. T., which when applied to the skin produced the minimal cutaneous reaction (a local redness about 4 mm. in diameter) would, when given subcutaneously produce both local and constitutional reactions. One-thirtieth of the same amount subcutaneously would produce local without constitutional reaction, while one-fiftieth produces neither local nor constitutional reaction. Thus, by the use of a definite quantity of O. T. on the skin, it is possible to determine (1) the borderland of reaction and absence of reaction to tuberculin which will be the degree of tolerance to tuberculin of the patient, and (2) the dose of tuberculin necessary to give the grade of reaction desired. In their cutaneous tests, the authors used 0.01 c.c. of various percentages of O. T., and protected the point of application with a vaccine shield in order to allow complete absorption.

The Treatment of Pneumonia by Leukocytic Extract.—Continuing the work of Hiss, FLOYD and LUCAS (*Jour. Med. Research*, 1909, xxi, 223) have used extracts of leukocytes in the treatment of 41 cases of pneumonia. The leukocytes were obtained from the exudate produced by the injection of aleuronat into the pleural cavities of rabbits. While the general mortality of lobar pneumonia is given by Musser as 21 per cent., the mortality of this series was only 12.2 per cent. Of the 5 fatal cases, 2 were bronchopneumonia in children, 2 were complicated by cardiac lesions, and 1 was a man, aged seventy years. About 44 per cent. terminated on or before the sixth day of the disease. The most striking result of the treatment was a definite constitutional improvement, relief of labored respiration, and improvement of such symptoms as might be due to toxemia. The extract was administered subcutaneously in doses of 10 c.c. twice daily. In no instance did the treatment do any harm, but in three instances an urticarial eruption appeared after an interval of four to seven days. Following the beginning of inoculation there was a steady diminution in the number of leukocytes in the peripheral circulation. The evidence of effect on the process in the lungs was not distinct.

Aseptic Purulent Meningeal Exudates.—WIDAL (*Revue mens. de méd. interne et de thér.*, 1909, i, 1) has considered carefully that group of cases showing the signs of meningitis in which lumbar puncture gives a thick, purulent but sterile exudate. An exudate of this character was first described as occurring in syphilis, but has since been met with in la grippe, pneumonia, puerperal eclampsia, uremia, suppurative otitis, after spinal cocainization, in mumps, and in meningeal conditions of unknown origin. The process may be a slow latent one, or it may begin with acute, alarming symptoms. On bacteriological examination of the spinal fluid, cultures, staining, and inoculations all prove it to be sterile. Especial stress is placed on the histology of the polynuclear cells present, for Widal asserts that the fact that these cells retain their normal structure is in itself evidence of the sterility of the fluid. For examination the sediment of the centrifugalized fluid is fixed on a slide and stained with hematin and eosin. In septic exudates the contour of the cells is indistinct, and both nucleus and protoplasm undergo marked changes. In sterile exudates the nucleus has a delicate texture, the protoplasm is perfectly homogeneous with fine granules, and the contour of the cell is distinct. The great importance of recognizing cases of meningitis with sterile exudate is that, in spite of what may appear to be a most unfavorable condition, the prognosis is excellent, for most cases result in complete recovery.

Experimental Transmission of Acute Poliomyelitis.—FLEXNER and LEWIS (*Jour. Amer. Med. Assoc.*, 1909, liii, 1639) have issued a preliminary report of their experiments in the inoculation of monkeys with the material obtained from two cases dying of acute poliomyelitis. An emulsion in salt solution of the spinal cord from the children, and later emulsions of the spinal cord of previously inoculated monkeys, were introduced through a trephine opening in the skull. In each instance the inoculated animal became paralyzed after a somewhat variable period. Histological study of the spinal cords of the monkeys showed in every case lesions similar to those of poliomyelitis in man.

[It is difficult to overestimate the importance of this communication. The power of reproducing the disease in an indefinite series of animals may well prove to be the first step in the production of a curative or preventive serum.—W. S. T.]

Arteriosclerosis of the Pulmonary Artery.—While the lesser circulation is usually unaffected in cases of generalized arteriosclerosis, in certain cardiac conditions, and especially in mitral stenosis, the pulmonary vessels alone may show signs of degeneration. LANBRY and PARVU (*Tribune méd.*, 1909, xlii, 484) report the case of a girl, aged twenty years, who had never had any rheumatism or any other infectious disease, but who had suffered with cardiac symptoms for many years. The diagnosis of mitral stenosis was made, and was confirmed at autopsy when the mitral opening was found to be nearly occluded. The aorta and the smaller arteries of the general circulation were in a practically normal condition, but the pulmonary arteries showed thickening and sclerosis in their whole extent. Lanbry and Parvu agree with Vaquez and Giroux, who have reported a similar case, in believing that the underlying cause in the production of this localized arteriosclerosis is the hypertension resulting from the narrowing of the mitral orifices. They also consider that the frequent and profuse pulmonary hemorrhages which occurred in their patient were greatly facilitated by the diseased condition of the vessels.

SURGERY.

UNDER THE CHARGE OF

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Rupture of the Biceps of the Arm.—LEDDERHOSE (*Deut. Zeit. f. Chir.*, 1909, cl, 126) says that according to his observations, neither a pure traumatic rupture of the biceps nor a traumatic separation of the upper pole occurs. The dislocation of the outer belly outward, which has frequently been described and illustrated, occurs in most cases spontaneously. The position of the long head of the biceps and the resulting defect are caused by arthritis deformans of the shoulder-joint. It is an occupation deformity. In the overwhelming number of cases described in the literature as traumatic ruptures of the biceps, there already existed pathological changes in the biceps tendon, and the trauma acted as the exciting cause. The occurrence of an indirect, purely traumatic rupture of a biceps tendon, not already invaded by a diseased process, must be doubtful. The very widely accepted view that an indirect, traumatic rupture occurs generally at the upper juncture of muscle and tendon, is not well supported. It appears questionable whether an indirect, traumatic rupture occurs in this portion. A rupture of the distal tendonous portion of the biceps at its insertion into the radius or in the immediate neighborhood appears to be determined by a preceding pathological process. Wounds of various grades in the muscular portion from direct trauma, have been repeatedly observed. Whether tears of the muscle substance can occur from indirect trauma has not been shown satisfactorily by the literature of the subject. The conditions which have been described as herniæ of the biceps, are, almost without exception, cases of dislocation of the outer belly of the biceps.

The Surgery of the Heart.—SALOMONI (*Archiv. gén. de. chir.*, 1909, iv, 881) had previously collected and reported 134 cases of cardiorrhaphy. He now calls attention to some new facts concerning this operation. He approaches the heart through the intercostal space which is the seat of the external opening of the wound, enlarging the wound by scissors and disarticulating from the sternum one or two adjacent costal cartilages. For wounds of the base of the heart or of the right cavity he advises a transverse section of the sternum. By retraction, an opening 8 cm. wide can be obtained with this method. He counsels drainage of the pericardium after every cardiorrhaphy, when one is not sure of his asepsis. The reason for it is the same as for peritoneal drainage. The serosa of the pericardium absorbs less than that of the peritoneum, and intrapericardial collections of blood are absorbed slowly. Of 58 cures, in 30 pericardial drainage had been practised. Pericardial effusion is frequent after cardiorrhaphy. It localizes itself posteriorly to the heart, and produces precordial oppression, anxiety, and weakness. The frequency of the pulse and cyanosis of the face appear only late. Up to the present time Salomoni has collected 158 cases of cardiorrhaphy. Of these, 59, or 37.33 per cent., were cured, and 99 died; 21 died before the end of the operation or soon after. There were 2 cases of double wound of the heart, and 1 case of gun-shot wound with the missile remaining in the ventricle. Some cases are irremediably mortal from simultaneous lesions of both cavities, valvular lesions, or lesions of the motor centres. Wounds of the heart through and through are not always fatal. In 5 such cases the posterior wound was unrecognized. Lesions of the coronary arteries are often fatal from arrest of the heart, cardiac degeneration, infarct, and aneurysm. Ligation of one of the branches of a coronary artery can be followed by a cure. The branches of the coronary arteries are not terminal, so that their successful ligature is possible. If the heart is arrested during cardiorrhaphy, light massage can make the heart beat anew. For the diagnosis of a cardiac wound, one should take into account, the seat of the wound, the symptoms of internal hemorrhage, increase of the cardiac dulness, the appearance of oppression, precordial distress, cyanosis, and rapidity of the pulse.

A Comparative Study of the Value of Internal Urethrotomy and of Divulsion.—CIMINO (*Ann. d. mal. d. org. gén.-urin.*, 1909, ii, 1361) says that the supporters of each of these two operations defend their positions forcibly up to the present time. He studied the subject from the standpoints (1) of the lesions and histological changes produced from the time of the operations to the final results, and (2) the septic phenomena, local and general, occurring after each operation. As the work was done on animals, traumatic strictures alone were studied. He traumatized the urethras, on the same day and by the same method, of ten animals, of the same species, of the same weight, and with urethras of the same calibers. Although the work was done only on traumatic strictures, Cimino believes that the results can be legitimately applied to the gonorrhœal type. Internal urethrotomy produces, at the site of the stricture, a linear, longitudinal, and regular section, the depth of which is preëstablished. As the wound widens it is transformed into a triangular or rectangular space opening into the urethra. It cicatrizes on the surface with a thin layer of fibrous tissue under the epithelium. The lesion produced by urethrotomy is strictly localized, so that it affects the stricture tissue only at the line of section. Divulsion produces tears of variable importance, and may pass in all directions. Upon healing, these lesions produce numerous extensive and irregular cicatrices, which reproduce the original lesions. New deformed and capricious strictures are added to the original one. The general aspect of the divulsed urethra varies according to the time when one observes it, but it is always characteristic. Immediately after the operation it presents as a bursted hollow organ; 8 days later it appears as a torn and fringed canal. When the lesions have become definite, the urethra appears as a rigid pipe, or a canal the surface of which is reduced to shreds. Divulsion terminates in the total transformation of the stricture into a cicatricial ring, with some epithelial elements scattered in the homogeneous, compact, fibrous tissue. These are always found on the surface of the urethra and in the glandular cavities, but they present the phenomena of proliferation and degeneration. Internal urethrotomy is, therefore, superior to divulsion. The septic condition of the urethra does not exercise any influence upon the choice of one or the other of these operations, as neither guarantees against the development of infectious lesions, local or general.

The Operative Treatment of Ununited Fractures.—CREITE (*Deut. Zeit. f. Chir.*, 1909, cl, 267) reports observations on 30 cases of ununited fracture operated on in Braun's clinic. The most frequent cause of non-union (18 cases) was the interposition of soft tissues between the fragments. The tibia was involved in 28 cases, the femur in 1 and the humerus in 1. In 17 cases the fracture was simple and in 13 compound. The time of operation was from four to twenty-eight weeks after the accident. In most cases (18) Bier's passive hyperemia and percussion at the seat of fracture, had been tried for several weeks, without success. In 15 cases, the old Dieffenbach method was employed, the seat of fracture being freely exposed by a flap incision. Ivory pegs were introduced, one above and the other below, into holes drilled through the bone, and the pegs were cut off level with the surface of the bone. In some cases, one of the bones of the leg was fixed with the ivory peg, and the other with wire sutures. The course of the healing was undisturbed in all, the pegs healing in. In no case was it necessary to remove the pegs secondarily. The time necessary for union varied from five weeks to twenty-eight weeks, the average being eight and one-half weeks. In one case, in which a steel nail had been employed, union failed. In 14 cases the ends of the fragments were resected and sutured together. One of these died eleven days after the operation from sepsis. In this case, however, there had been a compound fracture of the leg, and there had been an acute osteomyelitis of the tibia for about fourteen years. Three and a half weeks after his admission to the clinic, the necrotic bone was removed and the ends of the bone sutured. In 2 cases no bony union took place. In one there had occurred a severe compound fracture, with a torn, soiled wound, followed by severe suppuration and destruction of the periosteum of the fragments. The wire suture led to the formation of a fistula, and later the suture was removed. In the second case there had been a compound fracture of the humerus, with the loss of a 7 cm. piece of the whole thickness of the bone. The remaining 11 cases left the clinic with union, but in some the healing had been troublesome, and in 4 cases the suture had to be removed later on account of fistulæ. As a result of these experiences the Dieffenbach method is given the preference over the resection method.

Resection of the Middle Portion of the Duodenum.—KAUSCH (*Zent. f. Chir.*, 1909, xxxvi, 1350) says that resection of the descending portion of the duodenum may become desirable for various causes. A frequent and probably the most important indication seems to be a carcinoma of the papilla of Vater. The operation most frequently done is by a